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METHOD FOR PROVIDING INFORMATION AT
AN ENGINEERING PORTAL SITE

BACKGROUND OF THE INVENTION

The present invention relates to a method and system for providing information that makes it easy to find a new solution to a problem the user has.

5 Digital content sale systems for selling various contents have so far been proposed. For example, JP-A-11-345261 discloses a content management system and recording medium for making it possible that the utilization license for sending contents from a
10 terminal and the results of the utilization are sent to and managed in a central apparatus so as to enable the sale management and utilization management for each content.

On the other hand, research and development
15 institutions of various kinds of enterprises and universities have made many technology developments. The knowledge obtained from those technology developments are generally known by news release and publication in academic journals. Some of such
20 knowledge is kept in secrecy in order to maintain the competitiveness against other research and development institutions and to be utilized for various kinds of future business or is used within the associated institution for the reason of being developing that
25 technology. The know-how accumulated within the

5 If the pattern or a combination of steady solutions to
certain problems were offered, general designers and
users could create a new engineering analysis. JP-A-9-
251385 discloses a method for the new solution. In
this method, however, a way of offering a different
0 solution to a given problem is searched out on the
basis of attribute information from the past examples
of problem, but the method of searching is not clear
and is not based on a rule. Thus, it is less likely to
get a new idea, and there is no versatility. According
15 to this method, designers can extract rules from the
past examples of problem and find a constant rule.
Thus, this method is versatile, and it is likely to
create a solution that the user has never thought of.

However, when the ways of offering are
20 classified by technical field or problem, such
classification can benefit the customer, but most of
these methods are known. Therefore, there are the
following problems: (1) a method for solving a problem
cannot be immediately found, (2) a known method that
25 has so far been taken against the problem comes to be
used, and another new method is almost not likely to be
created, and (3) the customer must read extra
information not concerned with the customer's

SUMMARY OF THE INVENTION

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The recording medium that can be read by

portal site.

Figure 22 is a diagram showing an example of the inputting of data and result on a material strength calculation program image in the engineering portal
5 site.

DESCRIPTION OF THE EMBODIMENTS

(Embodiment 1)

One embodiment of the invention will be described. In this embodiment, when the end user has
10 an engineering problem, the most suitable engineering technique can be selected from an engineering portal site via an image on the Web in order to solve the problem. The selection of the engineering technique is dialogically, or interactively performed via the Web
15 image. FIG. 1 shows a method for interactively achieving this solution on the Web. Referring to FIG. 1, there is shown an offer content controller 100 has a customer database 104 that is used to interactively certify/sort out a customer according to the ID and
20 password that the customer has entered via an information service request apparatus 120. In addition, a content offer apparatus 110 has a problem case database 105 and a problem meta database 106 provided in order to select a solution according to the
25 problem.

The problem case database 105 is the DB in which data of the engineering problems that occurred in

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FIG. 3 shows an example of the structure of the problem meta database 106. This database has a

The abscissa 130 of the table shows the parameters that deteriorate on the corresponding problem, and the ordinate 140 of the table indicates the parameters that are desired to improve. In the table, the solution rule numbers are given in the respective cells.

FIG. 4 shows an example of the solution rules. FIG. 5 shows an example of the content database. The content database has (1) an engineering field 501 belonging to the corresponding problem, (2) a desired-to-improve parameter 502, (3) a deteriorated parameter 503, (4) a solution rule 504 corresponding to a combination of the parameters 502, 503, and (5) a content name 505 corresponding to the combination of these parameters. The engineering field 501 of the content database is also used for the user to be easy to see the contents arranged and displayed and to look for the solution in the same field as that of the user when many contents are found as a result of searching.

FIG. 6 is a flowchart showing the operation.

The user, in step 601, enters information concerned with a problem facing, for example, a parameter associated with a characteristic that is desired to improve, and a parameter that deteriorates, via the information service server. This information is sent through the offer content controller 100 to the content offer server 110. In addition, the user, in step 602, decides if either the problem meta database or the problem case database is selected. This selection may be made by the user. If the problem meta database is selected, the problem meta database 106 within the server is searched as in the step 603, so that a solution can be found and that the resulting solution rules can be displayed. Moreover, as in step 604, problem cases corresponding to the combination of the solution rules, the parameter to be improved and the parameter to be deteriorated are found out from the database 105 and displayed.

Here, the searching device in steps 603 and 605 are programs that function in the content offer server 110. The results of searching are sent to the information service request server 120, and displayed by the function of the browser in the information service request server 120.

If the problem meta database is not selected in step 602, problem cases corresponding to the combination of the parameter to be improved and the parameter to be deteriorated are searched for in

accordance with the input information in step 605, and the result is displayed in step 606.

Thus, by way of this procedure, the user can find out solutions similar to the problem the user has, from the finally displayed results of having searched the problem case database 105.

FIG. 7 shows an example of the result thus displayed. In this example, a fescue for use in the presentation by OHP (overhead projector) is tried to be made more compact without deteriorating its function. In other words, a problem occurs that the length of the fescue is desired to increase, but its volume is not wanted to increase as the requested characteristics. Here, the meta knowledge for the solution corresponds to the selected cell indicating that the volume and length of a moving object have been selected as a deteriorated parameter and a desired-to-improve parameter in the matrix shown in FIG. 3. That is, the cell includes, as solution rules, No. 7 (rule of nesting), No. 17 (rule of transition to other dimension), No. 4 (rule of asymmetry), and No. 35 (rule of parameter change). FIG. 7 shows solution rules found by searching the problem meta database 105. Moreover, the problem case database 105 is searched according to the solution rules, and case data are displayed in a table form on the Web browser on the user's terminal.

Another embodiment of the invention will be described below. This embodiment enables the end user having an engineering problem to select an engineering technique most suitable to solve the problem from the engineering portal site via the Web. The selection of the engineering technique is interactively performed by selecting contents of the engineering portal site via the Web. FIG. 8 shows a method for interactively achieving to find a solution on the Web. Referring to FIG. 8, there is shown a content offer server 310 that has a problem meta database 306, a problem case database 305 and a content database 307 provided in order to dialogically select a solution according to the problem. The function and structure of each database are the same as in the embodiment 1. These databases function as follows. The problem case database 305 or problem meta database 306 within the content offer server 310 is searched for the problem cases or solution rules in response to a request from an offer content controller 300. In addition, the content database 307 is searched for contents that can offer a solution associated with these problem cases or solution rules.

25 The operation will be described with a
flowchart of FIG. 9. In step 701, the user enters, via
the information service server, information concerned
with a problem facing, for example, a parameter desired

to improve and a parameter to be deteriorated. This information is sent through the offer content controller 300 to the content offer server 310. In addition, in step 702, it is decided if the problem
5 meta database is used. If the problem meta database 306 is decided to use in step 702, the problem meta database 306 within the server is searched for a solution in step 703. When the problem meta database 306 is searched, solution rules are produced as a
10 result of having searched. The content corresponding to a combination of these solution rules, the parameter to be improved and the parameter to be deteriorated is found out by searching the content database 307 as in step 704, and displayed as in step 705.

15 If the problem meta database is decided not to use in step 702, the problem case database 305 is searched with reference to the problem-related information entered in step 701, and the result is displayed in step 707.

20 Thus, the user can finally find out an engineering technique necessary for the solution from the displayed content.

FIG. 10 shows an example of the result thus displayed. The case data searched out from the content
25 database 307 is displayed in a table form on the Web browser on the user's terminal.

(Embodiment 3)

Another embodiment of the invention will be described with reference to FIG. 12. This embodiment changes the content displayed in association with the user's specialized field. In other words, this

5 embodiment provides a company database 616 and a customer database 615 on the offer content controller side. The company database 616 is generated by registering, on the existing company database 616, the company names, and chief products and technical fields

10 of the companies that the users entered for the membership registration. The problem case database and the problem meta database are searched according to the company name, the products and technical field of the company, the content number and content outline

15 suitable for the company or user's request. The results of having searched are displayed. FIG. 11 shows one example of the structure of the company database 616. As illustrated, the company database has information such as (1) company No., 201, (2) company

20 name 202, (3) product name 1, 203, (4) field 1 corresponding to the product 204, (5) product name 2, 205, (6) field 2 corresponding to the product 206, (7) product name 3, 207, (8) field 3 corresponding to the product 208, and (9) customer number belonging to the

25 company 209.

The user sorts out the contents of the engineering portal site via the Web image, thereby interactively making the selection of the engineering

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database 627 is decided to use in step 642, the problem meta database within the server is searched for a solution in step 643. When the problem meta database 627 is searched, a solution rule is produced as a
5 result of having searched. The content corresponding to a combination of this solution rule, a parameter to be improved, and a parameter to be deteriorated is searched out from the content database 625 as in step 644, and displayed in step 645.

10 If the problem meta database is decided not to use in step 642, the problem case database 626 is searched as in step 646 according to the information of the field corresponding to the products of the company to which the user belongs, which has been searched out
15 in step 641. The result is displayed in step 647.

Thus, the user can find out an engineering technique necessary for the solution from the finally displayed content.

(Embodiment 4)

20 Another embodiment of the invention will be described. In this embodiment, the problem meta database 627 is interactively narrowed down unlike the embodiments 1 and 2, or searched not by the stereotyped classification of techniques, but by the classification
25 tree based on the knowledge of the conventional use of analytical instrument. FIG. 14 shows a method for achieving this interactive solution on the Web. The

or 901 shows the history of items selected so far, the center of the image, or 902 indicates the buttons for selection of items, the lower side "go on" button 903, when clicked, can make the user view the next selection image, and the lower side "go back" button 904, when clicked, can make the user view the previous selection image. In addition, the instruments selected are actively displayed at the time of selection on the right-hand side of the image, or 905.

- 10 As the user follows this flow, a list of analytical instruments that the soft recommends can be finally displayed as shown in FIG. 18. This list includes a plurality of instruments 906 displayed, which are sorted in the order in which the samples cannot be destroyed with ease, and attached with
15 priority level 907.

(Embodiment 5)

- Another embodiment of the invention will be described. This embodiment enables the end user having
20 a problem with design of a machine to make calculation of thermal conduction and material strength necessary for solving the problem via the Web in the engineering portal site. FIG. 19 shows a method for achieving an interactive solution to this heat transmission
25 calculation on the Web. The server side has a heat transmission calculation program 1017 and a material database 1016. This embodiment makes the interactive

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narrowing down of information for solving a problem as follows. When the user enters the name of a material in the heat transmission calculation, the material database 1016 can be searched for a material value

5 (such as thermal conductivity) necessary to calculate the strength of material. FIGS. 20 and 21 show an example of the Web image for this interactive heat transmission calculation, and a calculation result. As illustrated in FIG. 20, an input image is displayed

10 where the user enters the fin length, fin thickness, fin root temperature, ambient temperature and material name, 908 necessary for heat transmission calculation. The heat transmission calculation program is executed to search the material database 1016 for material

15 values such as thermal conductivity according to the material name, and use the values for heat transmission calculation. FIG. 22 shows an example of the Web image for this interactive material strength calculation, and a result of the calculation. The calculation result

20 is the amount of heat transfer and fin efficiency displayed on the screen. Thus, by using this technique, it is possible that the user interactively performs various scientific calculations while viewing the Web image.

25 According to the above embodiments, the system that answers the question from the user can enable the user to immediately understand the solution to the problem and to be offered an information service

that is likely to give the user not the known solution to the problem, but a new solution to the problem.

According to the invention, since the user having a problem can be offered specific examples that
5 are concerned with new solution rules and the solution to the problem, the method for offering the contents can be effectively used.

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